

A NEW SPECIES OF DEEP-SEA ISOPOD,
STORTHYNGURA MYRIAMAE, FROM THE
WALVIS RIDGE OFF SOUTH AFRICA

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Abstract.—A new species of abyssal isopod, *Storthyngura myriamae*, is described. This species was collected at 5220 meters during the French JEAN CHARCOT expedition to the Walvis Ridge off South Africa. The study also includes a detailed comparison of the new species with the most closely related species *Storthyngura caribbea* from 1260 meters off the Windward Island in the West Indies.

Introduction

The deep-sea fauna on the western and eastern sides of the Walvis Ridge off South Africa between latitudes 25° and 35° south was recently investigated. This study was conducted aboard the R/V *Jean Charcot* by the French deep-sea group at the Brest Oceanographic Laboratory under the leadership of Dr. Myriam Sibuet. The deep-sea samples contained many isopods belonging to more than fifteen genera including the abyssal genus *Storthyngura*.

The isopod fauna on both sides of the Walvis Ridge is thus far poorly known. However, the Walvis Ridge abyssal region is of zoogeographic interest in view of the theory that the genus *Storthyngura* originated in the Antarctic slope (George and Menzies 1968b) and the distribution of *Storthyngura* species is somewhat related to the pattern of the Antarctic Bottom Water flow (George, unpublished data). The Walvis Ridge material contained a hitherto undescribed species of *Storthyngura* and the new species is named in honor of Myriam Sibuet for graciously providing the isopod material for study.

Order: Isopoda, Suborder Asellota
Family: Eurycopidae
Storthyngura myriamae, new species
Fig. 1A-H

Diagnosis.—*Storthyngura* with cephalon devoid of any spines. First pereonal somite lacking dorsal spines; somites 2 to 4 having single, prominent, anterior dorsal spine; in addition, somites 2 to 4 with posterior transverse ridge exhibiting median tubercle. Somites 5 to 7 displaying a pair of well-developed median dorsal spines. First pleonal somite lacking spination. Pleotelson with anterior spine and pair of posterior dorsal tubercles; 2 well-defined lateral spines and triangular apex. Basis of uropod approximately same length as endopod; exopod about two-thirds length of endopod.

Material and station data.—Holotype female: length = 21 mm, width 8 mm (U.S.N.M. Cat. No. 184668).

Type-locality: Angola Basin west of Walvis Ridge, JEAN CHARCOT Station

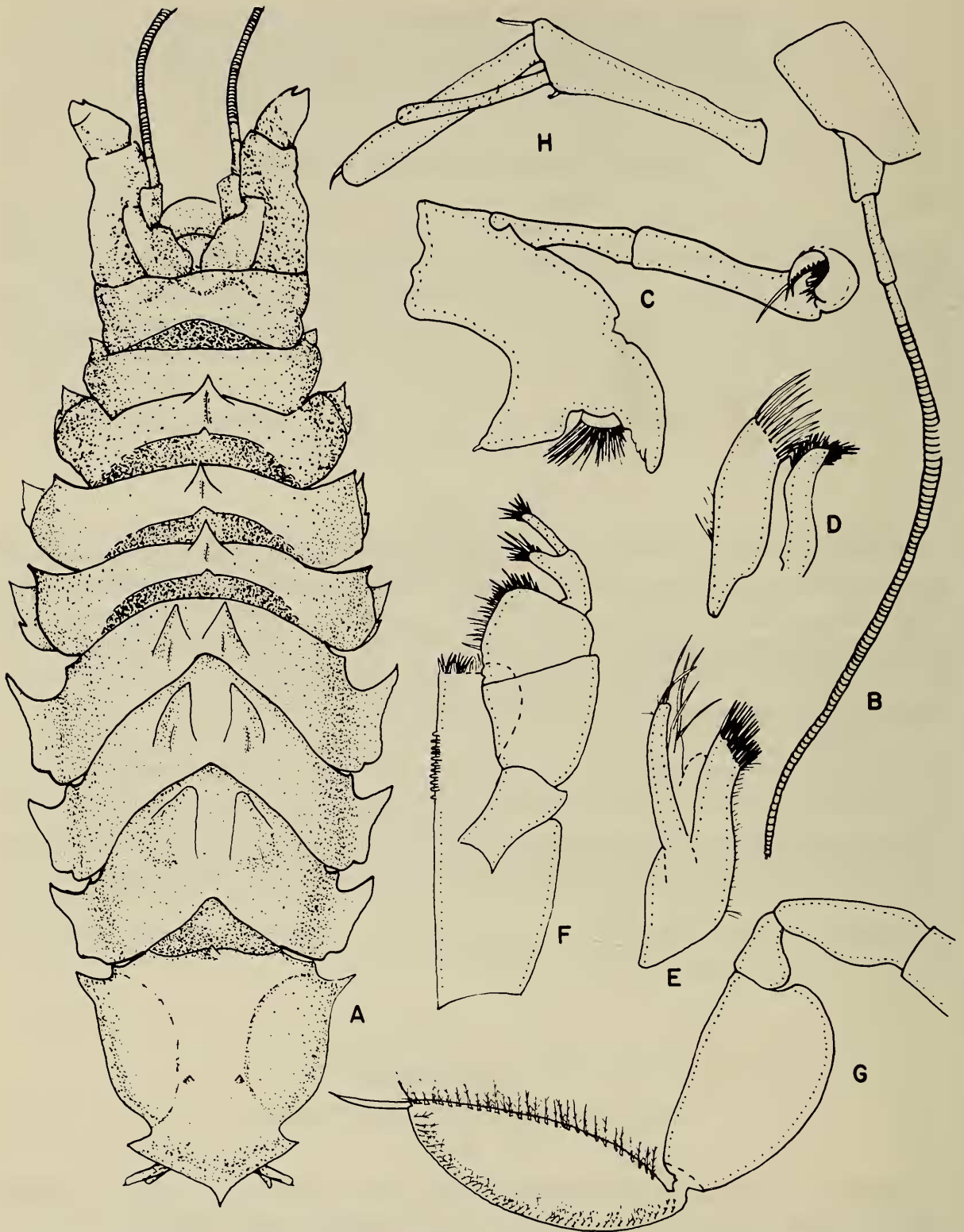


Fig. 1. *Storthyngura myriamae*: Holotype female, length 21 mm. A, Dorsal view; B, First antenna; C, Left mandible; D, Maxillule; E, Maxilla; F, Maxilliped; G, Sixth pereopod; H, Uropod.

DS09, one female specimen, 5220 m, 26°59.9'S–27°00.0'S, 1°06.7'E–1°06.2'E. Date: 6-Jan-79.

Other localities: JEAN CHARCOT Station CP10, one female specimen, 5210 m, 26°15.9'–27°00.35'S, 1°07.1'–1°06.4'E. Date: 7-Jan-79 (returned to Dr. Sibuet for deposition in the Brest Reference Museum); JEAN CHARCOT Station CP12,

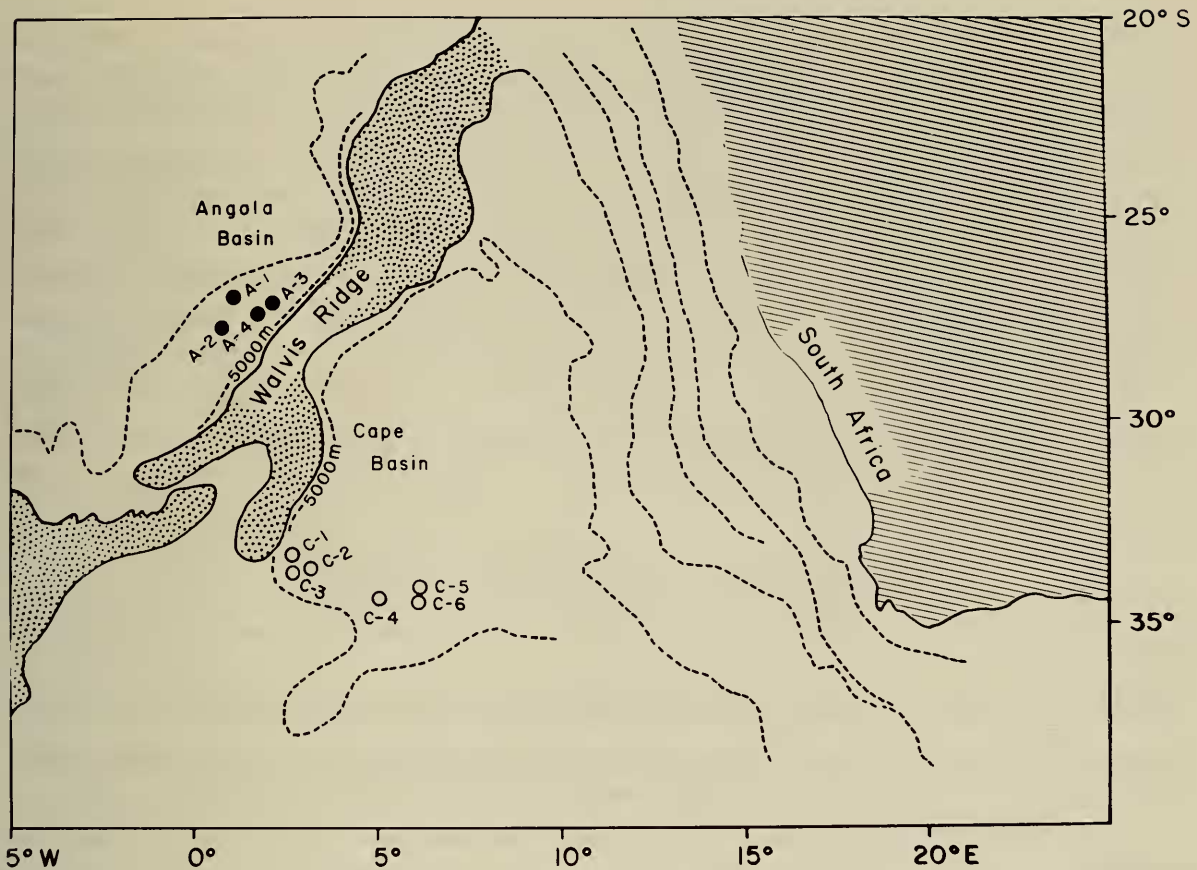


Fig. 2. Area map showing the Walvis Ridge separating the Angola and Cape basins. Stations with *S. myriamae* shown in solid circles and stations lacking *S. myriamae* shown in open circles.

two female specimens, 4660 m, 27°37.6'–27°38.5'S, 0°50.8'–0°51.3'E. Date: 9-Jan-79. Fragments from Station DS07 (See Fig. 2).

General Description

Body shape ovate, approximately 3 times longer than wide. Cephalon including a pair of mounds on dorsal surface. Lateral margin concave; frontal margin truncate.

First pereonal somite without spination. Antero-lateral margin rounded, coxal plates small and acicular; second pereonal somite having prominent median spine, antero-lateral margin rounded; coxal plates protuberant and bilobed, anterior lobe prominent. Posterior ridge on somites 2 to 4 exhibiting median tubercle; somites 3 and 4 each with produced median spine, antero-lateral margins acutely produced, prominent and bilobed coxal plates with distinct anterior lobes; somites 5, 6, and 7 with paired prominent median spines, concave posterior margins, lateral margins produced into spine-like process, coxal plates absent.

Pleon with prominent anterior pleonal somite, smooth and lacking any spines; pleotelson shield-like, with well-developed acute antero-lateral angles and projecting postero-lateral spines; apex triangular and converging to a point. Pleotelson with anterior spine and pair of conical tubercles located anterior to postero-lateral spines.

First antennae with capacious basal article, lateral margin entire. Peduncle with

one broad basal article, second article shorter than elongated third article: fourth article narrow, about one-half length of third article. Flagellum with more than 60 annulate articles. Mandible with prominent palp consisting of 3 articles; second article slightly longer than first article; third article inflexed into semi-circular pattern; inner basal margin displaying a row of thick setae, distal margin with 7 to 8 blunt, short spines and terminal setae. Well-developed cutting phase with pronounced molar and very dense middle row of approximately 20 spines. Incisor uniform with quadridentate lobe. Maxillule with outer lobe two times as broad as inner lobe; both lobes with dense setae at distal ends; outer lobe with approximately 15 stout, spine-like setae. Maxilla trilobed with outer lobes slender, each furnished with 2 to 4 long setae; inner lobe stout with approximately 20 terminal setae. Maxilliped with 11 coupling hooks on endite; palp with elongate basal article, somewhat narrower at base; second and third articles expanded, second article devoid of marginal setae, third article containing approximately 28 marginal setae on inner margin; fourth article distally produced into lobe one-third length of article, with about 10 terminal setae; fifth article narrow, with tuft of apical setae.

Posterior 3 legs morphologically similar; basis elongated, about as long as carpus and ischium combined. Merus and propodus expanded, propodus with dense row of plumose setae on inner and outer margins; dactyl relatively long and narrow. Uropod with basis as long as endopod; exopod three-fourths length of endopod.

Morphological Affinities with *S. caribbea*

In terms of pleotelson configuration, *S. myriamae* exhibits a superficial resemblance to *S. unicornalis* and in fact, to all member species of the B₂ *Storthyngura* group according to the scheme proposed by George and Menzies (1968b). However, this species is so unique in possessing a transverse ridge in somites two to four which is posterior to the prominent median dorsal spines in all three somites. This transverse ridge also exhibits a small median tubercle. The only other species in the genus *Storthyngura* that has a similar transverse ridge with tubercles on the second through fourth somites is *S. caribbea* which was originally described by Benedict as a species belonging to the genus *Eurycope*; subsequently, Richardson (1905) redescribed this species. Wolff (1962) properly affiliated this species to the genus *Storthyngura* but treated it as a subspecies of *S. pulchra*. George and Menzies (1968a, b) offered reasons for distinguishing *S. caribbea* as a distinct species.

We believe that the new species *S. myriamae*, found in the Angola Basin at 5220 m, is somehow very closely related to *S. caribbea* which occurs off the Windward Island in the West Indies at a depth of 1260 m. We examined the type specimen from the U.S. National Museum (courtesy of Dr. Tom Bowman), compared the two species, and arrived at the following major morphological differences between the two species.

Close observation of *S. myriamae* and *S. caribbea* revealed a striking similarity in the shape of the head and general body form. One major difference is found in the second somite; the antero-lateral angle is produced in *S. caribbea* but rounded in *S. myriamae*. Also, comparison of the mouthparts showed conspicuous anatomical differences in the mandible and maxilliped. The palp of the

maxilliped in *S. caribbea* has a short basal article widened at its base; *S. myriamae* has a palp with an elongated basal article that is narrow at its base.

Both *S. caribbea* and *S. myriamae* have single non-lobed coxal plates on the first somite, but *S. caribbea* has coxal plates that are far more produced than those found in *S. myriamae*. *Storothyngura caribbea* has elongated dorsal spines while *S. myriamae* has spines of a moderate length. There are also differences between the two species in the shape of the first pleonal somite and the pleotelson. In *S. myriamae* the median dorsal length of the first flat pleonal somite is two times that of its lateral extremity, but in *S. caribbea* it is of even length throughout.

We believe that *S. myriamae* shows a close affinity with *S. caribbea*, but based on the morphological differences, *S. myriamae* is a distinct new species.

Distribution: Angola Basin vs. Cape Basin

The primary purpose of the French deep-sea expedition was to look for any faunal differences at the abyssal depths between the Angola Basin (on the western side of the Walvis Ridge) and the Cape Basin (on the eastern side of the Walvis Ridge, see Fig. 2). Both basins contained oligotrophic clay-like ooze (Sibuet 1980) but the Angola Basin is rich in CaCO_3 (70%) and the Cape Basin is poor in CaCO_3 (not more than 5%). In terms of bottom currents, the Angola Basin is subject to possible inflow of the Antarctic Bottom Water whereas the Cape Basin is blocked by the Walvis Ridge which possibly acts as a topographic and therefore biogeographic barrier for the expansion of deep-sea fauna from the Weddell Sea–Scotia Sea Antarctic region. This geographic zone was considered as a center of origin for the genus *Storothyngura* (George, 1980). It is also known that the Antarctic Bottom Water extends north even beyond the equator into the North Atlantic and abyssal regions off the West Indies.

In this present study we have carefully examined the isopod material from the deep-sea stations on both sides of the Walvis Ridge, four stations from the Angola Basin and six stations from Cape Basin (Fig. 2). We encountered *Storothyngura myriamae* only in the Angola Basin occurring at all four stations. *Storothyngura myriamae* was not found in any one of the six stations at comparable depths in the Cape Basin. It is of interest to point out that *S. myriamae* belongs to *Storothyngura* B₂ group which includes six species of similar pleotelson configuration (*S. fragilis* from the North Pacific, *S. caribbea* from the North Atlantic, *S. unicornalis* from the South Pacific, *S. gordonae* from the Indian Ocean, and *S. challengerii* from the Antarctic Ocean). Although the B₂ group is not represented in the Cape Basin, C-group (*S. symmetrica*) and D-group (*S. triplispinosa*) are represented in the Cape Basin (George and Menzies 1968b). Such a pattern of difference in biogeographic distribution between B-group and C & D-groups suggests apparently different evolutionary pathways for the species within the genus *Storothyngura*.

This new species from the Angola Basin shows close morphological similarity with *S. caribbea* from the West Indies region which is separated from the Angola Basin by a series of abyssal basins such as the Guinea Basin, Sierra Leone Basin, Cape Verde Basin, and Guiana Basin. These basins have a deep sill-depth and therefore, faunal affiliation between these basins at the abyssal depths should be

carefully investigated. However, our knowledge of the abyssal zoogeography and faunistic link between these basins is very limited due to paucity of deep-sea samples.

It is of interest to point out that *S. myriamae* is also related to *S. challengeri* from the Antarctic Ocean. We can not, however, offer any explanation of the evolutionary directions and speciation pattern of these closely related B-group *Storothyngura* species. On the basis of plesiomorphic features, the Antarctic slope species from the Weddell Sea region appear to be somewhat primitive (George 1980), although it is difficult to point out which one is the most primitive or parental species. Nevertheless, the global distribution pattern of *Storothyngura* species suggests that their speciation and radiation into the abyssal regions of the World Oceans since Miocene period is possibly promoted by the flow of the Antarctic Bottom Water which originates in the Weddell Sea region. This hypothesis obviously calls for careful reevaluation and further investigation.

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